

Comprehensive Monitoring Strategy

*for Watershed Health with a focus on
Salmon Recovery*



Presentation December 2002



Substitute Senate Bill 5637

- Required a Monitoring Oversight Committee develop a comprehensive statewide strategy (Strategy) for monitoring watershed health, with a focus on salmon recovery.
- Required development of a state agency action plan that phases full implementation by June 2007.



Committee Responsibilities

- The Committee must address the monitoring recommendations of the ISP and of JLARC in its report on *Investing in the Environment*; and
- The Committee must make recommendations to individual agencies to improve coordination of monitoring activities.



Committee Responsibilities

- Encouraged to refocus existing agency monitoring activities.
- Be based on:
 - Greater coordination of existing activities
 - Require monitoring most relevant to local, state, and federal objectives
 - Facilitate the exchange of monitoring information



Specific Tasks

- Define the monitoring goals, objectives, and questions
- Identify and evaluate existing state and non-state monitoring activities.
- Develop statistical designs
- Develop performance measures
- Standardize monitoring protocols



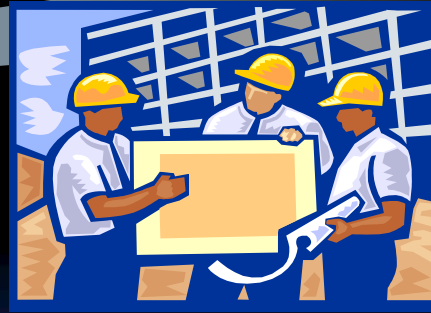
Specific Tasks (continued)

- Develop procedures to ensure quality assurance and quality control
- Recommend necessary infrastructure to support easy access, sharing, and coordination of data.
- Integrate monitoring information into decision making
- Recommend organizational and governance structures



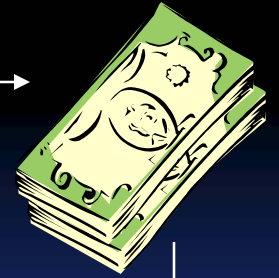
Use existing structures

Clinic



Build a blueprint

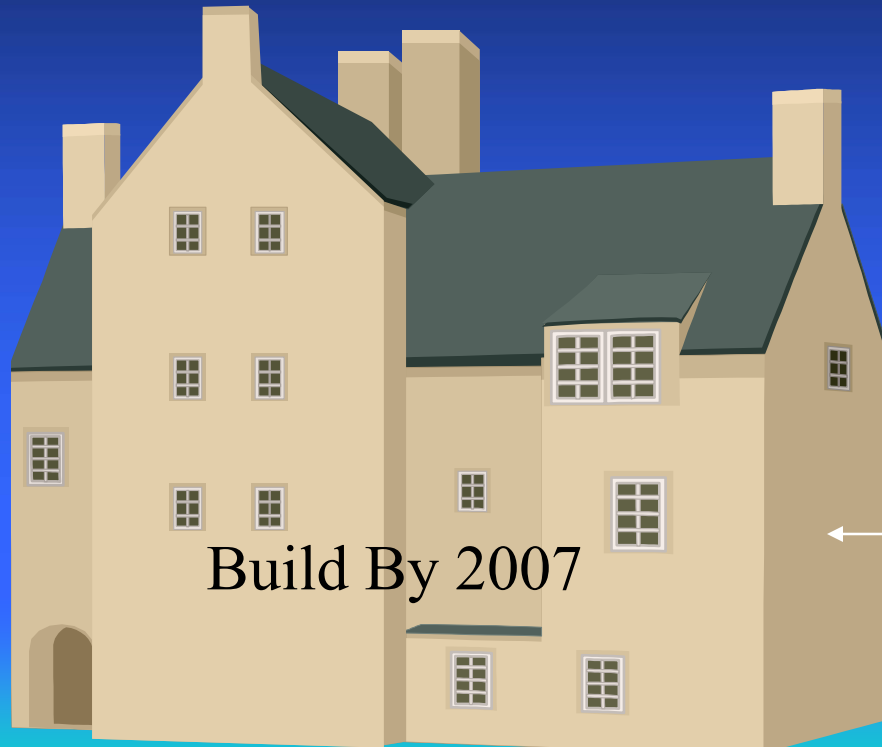
Cost it out



Prioritize
construction
based on need

Hospital

Build By 2007





Project Deliverables

- Volume 1 – Executive Report – an overview of the Strategy and Action Plan
- Volume 2 – Comprehensive Monitoring Strategy –includes detailed technical information required by SSB 5637.
- Volume 3 – Action Plan – includes costs, priorities, and timelines for implementation.



Reporting

- Interim report due to the Governor and Legislature by March 1, 2002
- Final report by December 1, 2002.



Stakeholders

- 71 individuals representing 23 different federal, state, tribal, and local agencies.



General Findings

- Current monitoring activities are not comprehensive and are lacking in nearly every category.
- Only 19% of the identified watershed health and salmon recovery data are viewable on the Internet.
- Greatest overlap of data concern tracking fish passage barriers.

Current Monitoring Overview

- Measuring Flow
- Water Quality
- Freshwater habitat
- Marine habitat
- Measuring spawning salmon
- Measuring migrants
- Harvest
- Effectiveness of Projects
- Poor –Numerous gaps
- Poor – 6 of 300 measured
- Poor – Very little
- Fair – Nearshore marine gaps
- Good – need precision
- Fair – not enough
- Very good – Reporting
- Poor – Very little information



Guiding Principles

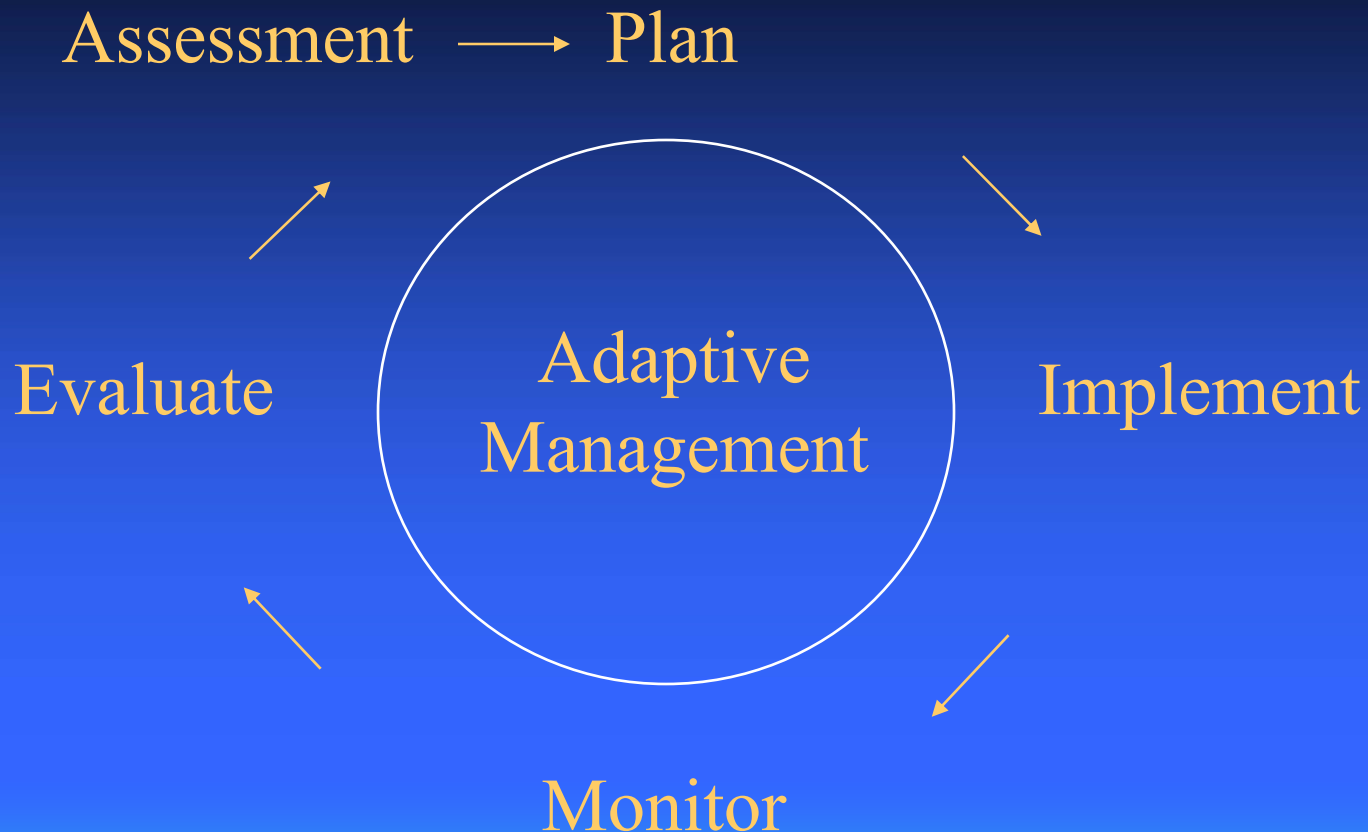
- Resolve important scientific, policy, and management questions using an adaptive management approach;
- Ensure that monitoring information is accessible to the public and all levels of government.
- Evaluate and account for the state's investments in watershed health and salmon recovery actions; and
- Determine trends in fish, water, and habitat conditions



Creating An Adaptive Management Framework

"Adaptive management" means reliance on scientific methods to test the results of actions taken so that the management and related policy can be changed promptly and appropriately.

RCW 77.85.010





Recommended Actions

- Establish a permanent Watershed Monitoring Council (WMC)
- Institutionalize the State Agency Action Plan and State Watershed Health Report Card
- Establish a consistent funding source

WMC Roles and Functions

- Address continuing policy and technical issues.
- Ensure completion of missing elements of the Strategy.
- Promote inter and intra state coordination and communications.
- Recommend governmental actions designed to consolidate, simplify, and make more efficient state monitoring.
- Forum for coordinating local watershed and state monitoring efforts.
- Synthesized statewide reporting.



WMC Structure

- Established by law
- Supported by at least one professional level staff
- Convened on a regular basis
- Funded by state appropriations
- Chaired by a citizen at large
- Housed in a “neutral” organization
- Consist of 9 voting members



Accessibility Of Monitoring Information



Information Management Issues

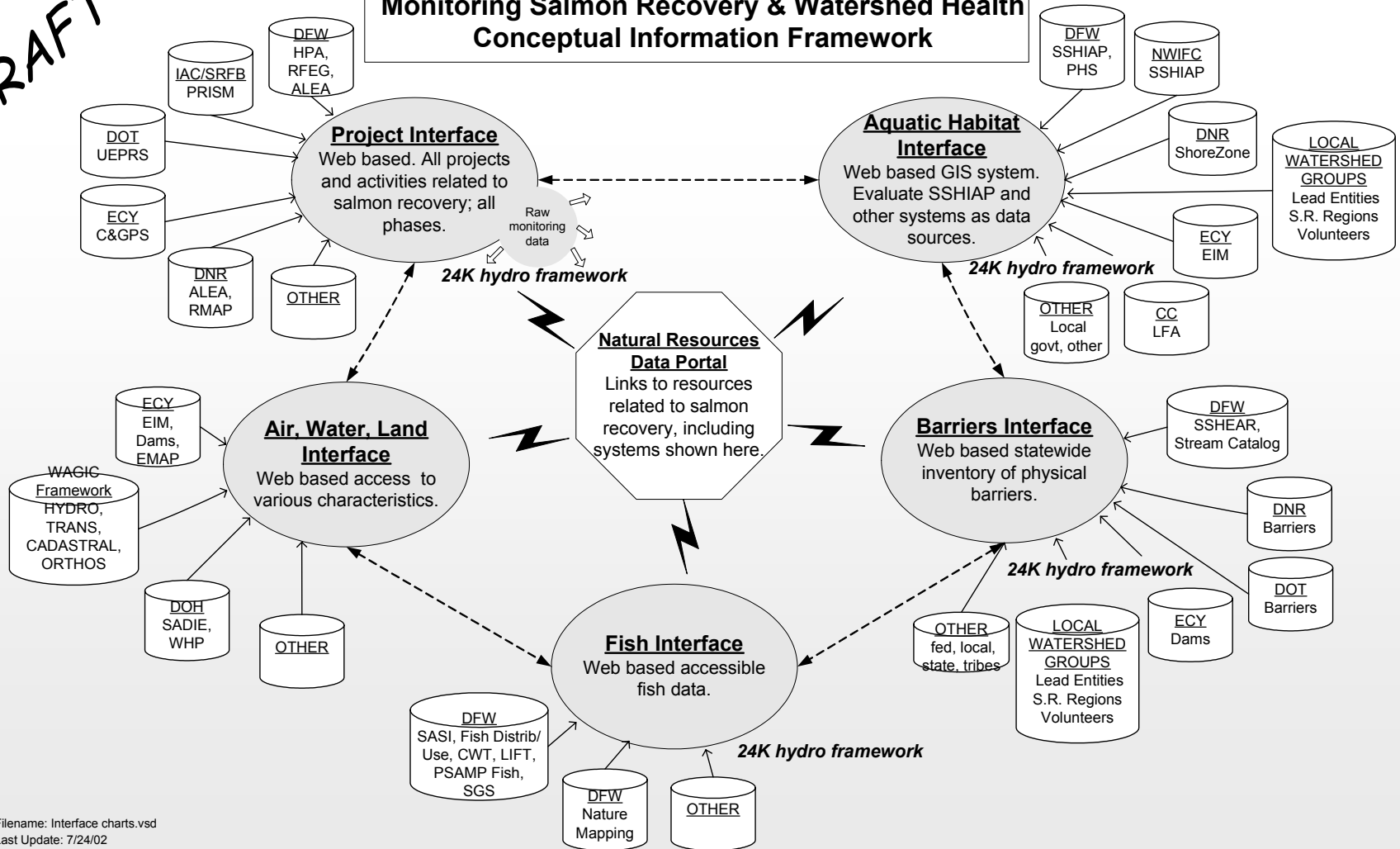
- No common access point to information
- Common need for Geospatial representation
- There is limited data sharing among agencies and local watershed groups
- No uniform data quality control standards
- Funding needs

Data Recommendations

- Establish a natural resources data portal as a first step to a comprehensive approach to data sharing.
- Create a universal data interface where local partners can enter and access watershed data.
- The Department of Fish and Wildlife should update elements of the Salmon Stock Inventory annually.
- The Department of Fish and Wildlife should develop and publish annual estimates of the impact of harvest upon the rate of salmon recovery.

DRAFT

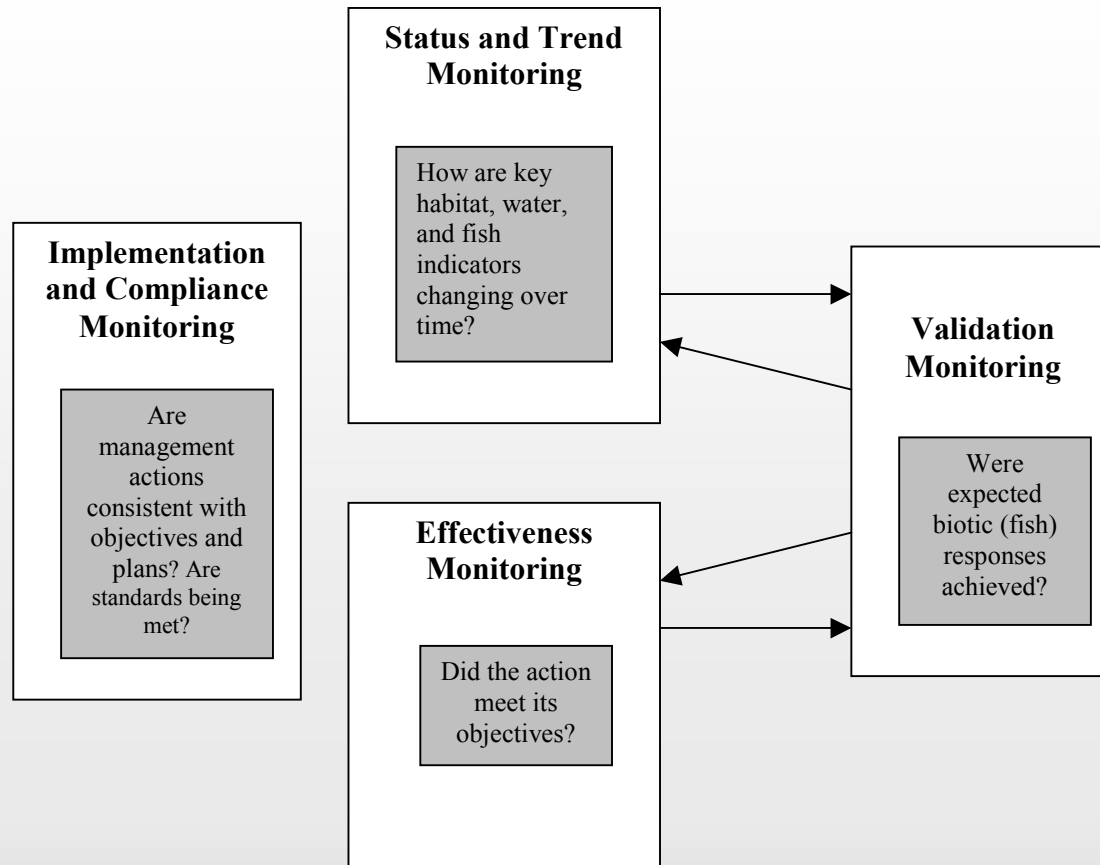
Monitoring Salmon Recovery & Watershed Health Conceptual Information Framework





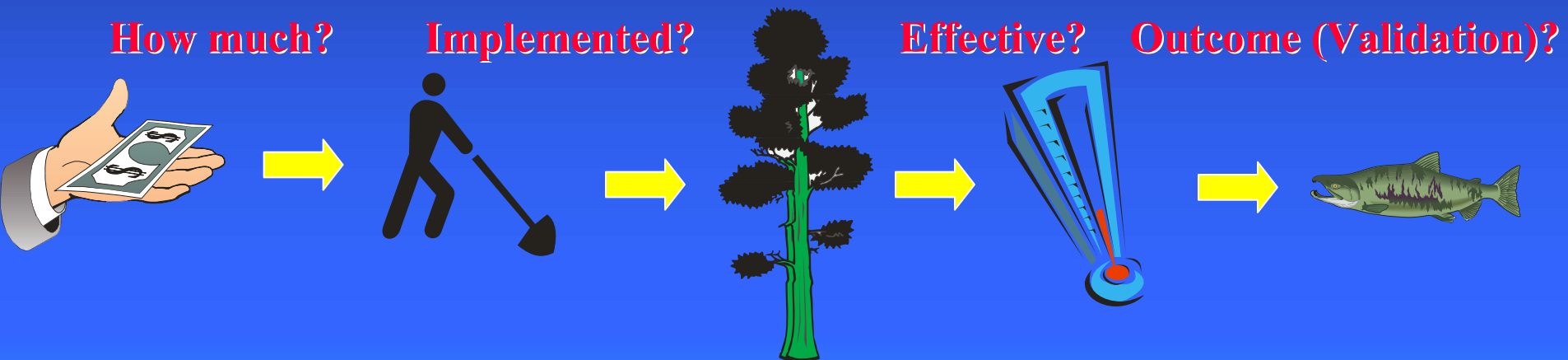
Accountability for Effectiveness of Investments in Recovery Actions

Relationship Types of Monitoring



Aquatic Habitat

- Project implementation, effectiveness, and validation



Recommended Habitat Restoration Project Implementation Monitoring

- Continue reviewing annually 100% of projects for completion.
- If 100% review is not possible, implement statistically valid sampling design.
- Check quality of Implementation monitoring through a periodic performance audit coupled with a financial audit

Recommended Habitat Restoration Project Effectiveness Monitoring

- Develop structured approach to monitoring effectiveness of habitat restoration projects.
- Set aside a specific amount of restoration project funds for monitoring effectiveness.
- Standardize project categories across the funding entities.
- Review and analysis project effectiveness by category.

Recommended Habitat Restoration Project Effectiveness Monitoring (cont.)

- A Quality Assurance (QA) Project Plan should be developed by each entity conducting monitoring.
- The sampling protocols should be standardized to the greatest extent possible in order to allow comparisons between projects over time.

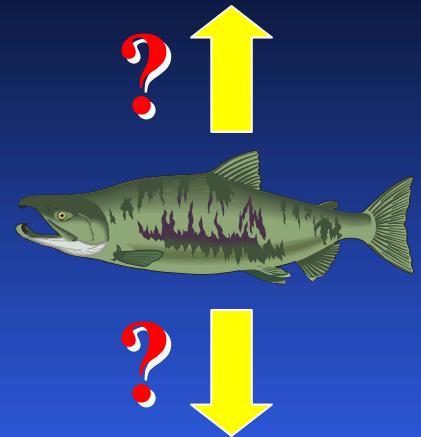
Validation (Intensive) Monitoring?



QUESTIONS

- Temperature ?
- Siltation ?
- Nutrients/Food ?
- Other ?

Scientifically
accepted
protocols



- Funding entities and citizens want the answers to these questions.



Validation Monitoring Recommendations

- **NEW** Create one or more “Intensively Monitored Watersheds” (IMWs).
- Salmon Recovery Regions, state agencies, Forests-Fish Monitoring Design Team and others, should jointly identify IMWs

Validation Monitoring Recommendations (Cont.)

- *SRFB and NWPPC/BPA should coordinate clustering of selected habitat restoration projects in IMWs.*
- *Implement Forests and Fish Agreement monitoring.*
- *Seek opportunities to build on existing work. –Index Watersheds*

Trends In Environmental Conditions



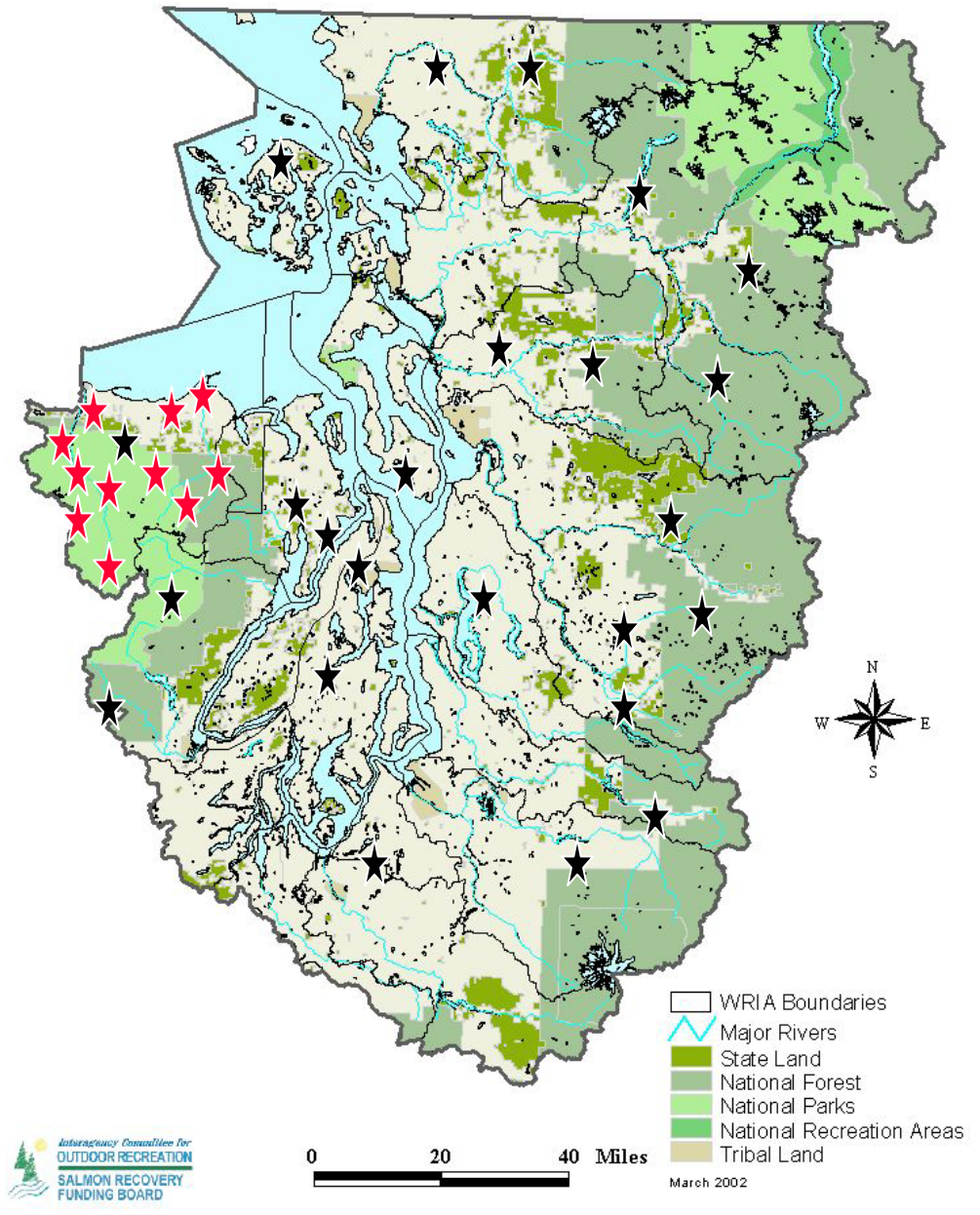
Aquatic Habitat Recommended Monitoring

- **NEW** Status and trends at multiple scales using EMAP
 - Statewide, Regional, Watershed
- Implement Forest Fish status monitoring.

Puget Sound Salmon Recovery Region

★ EMAP for Region

★ EMAP for WRIA





Nearshore Recommendations

- Expand DNR submerged vegetation monitoring program using EMAP to include entire marine shoreline of Washington.
- Collect bathymetry for the nearshore uplands, intertidal and shallow subtidal areas using a combination of aerial photography, LIDAR and multi-beam SONAR.
- Increase indicators sampled to include: substrate, emergent vegetation, shoreline modifications, and water quality



Nearshore Recommendations

- Develop a common basemap where nearshore marine conditions can be placed and analyzed.
- Use the Corps of Engineers Puget Sound Nearshore Ecosystem Restoration Program to further focus and help fund the monitoring strategy

Water Quality Recommended Monitoring

- Expanded Status and trends:
 - “Conventional” indicators, nutrients, toxins
 - EMAP sample design tied to fish and habitat
- Continue monitoring impaired water bodies
- Continue and increase effectiveness monitoring (TMDLs, BMPs)
- Continue ambient monitoring program

Water Quantity Recommended Monitoring

- Expand sites continuous flow monitoring
- Expand sites where Instream Flows have been set
- Expand sites monitored for compliance with water metering and water rights



Salmon Recommended Monitoring

- Continue Spawner Abundance Methods
 - Build on existing monitoring
 - Safeguard Essential tools
 - Mass-marking of hatchery fish
 - Age-analysis
 - Improve precision, data quality control and assurance

Salmon Recommended Monitoring (cont'd)

- Continue and increase juvenile migrant trapping and abundance estimates
- NEW Resident trout abundance estimates tied to EMAP
- Continue and Increase Productivity estimates (cohort reconstruction)
- NEW Spatial distribution using volunteers
- NEW Genetic diversity (DNA analysis of existing samples)

